

RAW SEQUENCE LISTING

**The Biotechnology Systems Branch of the Scientific and Technical
Information Center (STIC) no errors detected.**

Application Serial Number: 09/857,6/38
Source: 1FW/6
Date Processed by STIC: 5/6/05

ENTERED



IFW16

RAW SEQUENCE LISTING

DATE: 05/06/2005

PATENT APPLICATION: US/09/857,613B

TIME: 13:30:05

Input Set : A:\BB1289 - Sequence Listing.txt

Output Set: N:\CRF4\05052005\I857613B.raw

3 <110> APPLICANT: Rafalski, J. Antoni
 4 Cahoon, Rebecca E.
 5 Coughlan, Sean
 6 Miao, Guo-Hua
 8 <120> TITLE OF INVENTION: PLANT VITAMIN E BIOSYNTHETIC ENZYMES
 10 <130> FILE REFERENCE: BB1289
 C--> 12 <140> CURRENT APPLICATION NUMBER: US/09/857,613B
 C--> 13 <141> CURRENT FILING DATE: 2001-06-04
 15 <150> PRIOR APPLICATION NUMBER: 60/110,781
 16 <151> PRIOR FILING DATE: 1998-12-03
 18 <160> NUMBER OF SEQ ID NOS: 43
 20 <170> SOFTWARE: Microsoft Office 97
 22 <210> SEQ ID NO: 1
 23 <211> LENGTH: 792
 24 <212> TYPE: DNA
 25 <213> ORGANISM: Zea mays
 27 <220> FEATURE:
 28 <221> NAME/KEY: unsure
 29 <222> LOCATION: (586)
 30 <223> OTHER INFORMATION: n= a, c, g, or t
 32 <220> FEATURE:
 33 <221> NAME/KEY: unsure
 34 <222> LOCATION: (718)
 35 <223> OTHER INFORMATION: n= a, c, g, or t
 37 <220> FEATURE:
 38 <221> NAME/KEY: unsure
 39 <222> LOCATION: (762)
 40 <223> OTHER INFORMATION: n= a, c, g, or t
 42 <220> FEATURE:
 43 <221> NAME/KEY: unsure
 44 <222> LOCATION: (773)
 45 <223> OTHER INFORMATION: n= a, c, g, or t
 47 <220> FEATURE:
 48 <221> NAME/KEY: unsure
 49 <222> LOCATION: (782)
 50 <223> OTHER INFORMATION: n= a, c, g, or t
 52 <220> FEATURE:
 53 <221> NAME/KEY: unsure
 54 <222> LOCATION: (790)
 55 <223> OTHER INFORMATION: n= a, c, g, or t
 57 <400> SEQUENCE: 1
 58 gttgagccct gttcaagccg agagaggaaa tgctctcgct gcagcgcagg gggtgtcgga 60
 59 tcaggttact ctgcaagttg ctgatgctct ggagcaaccg tttcctgacg ggcagttcga 120

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60 tctggtgtgg tccatggaga gtggcgagca catgccggac aagagaaagt ttgttagtga 180
 61 gctagcacgc gtggcggctc ctggagggac aataatcatc gtgacatggt gccataggaa 240
 62 cctggatcca tccgaaacct cgctaaagcc cgatgaactg agcctcctga ggaggatatg 300
 63 cgacgcgtac tacctcccgg actggtgctc accttcagac tatgtgaaca ttgccaagtc 360
 64 actgtctctc gaggatatca agacagctga ctggtcggag aacgtggccc cgttttggcc 420
 65 cgccgtgata aaatcagcgc taacatggaa gggcttcacc tctctgctga cgaccggatg 480
 66 gaagacgata agaggcgcga tggatgatgcc gctaataatc cagggtctaca agaaggggct 540
 W--> 67 catcaaattc accatcatca cctgtcgcaa gcctggagcc gcgtangagg aggcaaggag 600
 68 cacaagttac tagcacagca caggatgcaa gtgcatatgt agatcatggc acatcgccgt 660
 69 cactcatcat actgcacaaa atcaaattctc caggacattt aataattctg cacctcanat 720
 70 attcaggggg gccgggtacca atcgccatat gatctatacc gnccacggcg tcnttaactc 780
 71 tnacggaaan ct 792
 73 <210> SEQ ID NO: 2
 74 <211> LENGTH: 191
 75 <212> TYPE: PRT
 76 <213> ORGANISM: Zea mays
 78 <400> SEQUENCE: 2
 79 Leu Ser Pro Val Gln Ala Glu Arg Gly Asn Ala Leu Ala Ala Ala Gln
 80 1 5 10 15
 82 Gly Leu Ser Asp Gln Val Thr Leu Gln Val Ala Asp Ala Leu Glu Gln
 83 20 25 30
 85 Pro Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly
 86 35 40 45
 88 Glu His Met Pro Asp Lys Arg Lys Phe Val Ser Glu Leu Ala Arg Val
 89 50 55 60
 91 Ala Ala Pro Gly Gly Thr Ile Ile Ile Val Thr Trp Cys His Arg Asn
 92 65 70 75 80
 94 Leu Asp Pro Ser Glu Thr Ser Leu Lys Pro Asp Glu Leu Ser Leu Leu
 95 85 90 95
 97 Arg Arg Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser
 98 100 105 110
 100 Asp Tyr Val Asn Ile Ala Lys Ser Leu Ser Leu Glu Asp Ile Lys Thr
 101 115 120 125
 103 Ala Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Lys
 104 130 135 140
 106 Ser Ala Leu Thr Trp Lys Gly Phe Thr Ser Leu Leu Thr Thr Gly Trp
 107 145 150 155 160
 109 Lys Thr Ile Arg Gly Ala Met Val Met Pro Leu Met Ile Gln Gly Tyr
 110 165 170 175
 112 Lys Lys Gly Leu Ile Lys Phe Thr Ile Ile Thr Cys Arg Lys Pro
 113 180 185 190
 115 <210> SEQ ID NO: 3
 116 <211> LENGTH: 521
 117 <212> TYPE: DNA
 118 <213> ORGANISM: Oryza sativa
 120 <220> FEATURE:
 121 <221> NAME/KEY: unsure
 122 <222> LOCATION: (269)
 123 <223> OTHER INFORMATION: n= a, c, g, or t

RAW SEQUENCE LISTING

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PATENT APPLICATION: US/09/857,613B

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Input Set : A:\BB1289 - Sequence Listing.txt

Output Set: N:\CRF4\05052005\I857613B.raw

125 <220> FEATURE:
126 <221> NAME/KEY: unsure
127 <222> LOCATION: (274) ✓
128 <223> OTHER INFORMATION: n= a, c, g, or t
130 <220> FEATURE:
131 <221> NAME/KEY: unsure
132 <222> LOCATION: (286) ✓
133 <223> OTHER INFORMATION: n= a, c, g, or t
135 <220> FEATURE:
136 <221> NAME/KEY: unsure
137 <222> LOCATION: (302) ✓
138 <223> OTHER INFORMATION: n= a, c, g, or t
140 <220> FEATURE:
141 <221> NAME/KEY: unsure ✓
142 <222> LOCATION: (330)
143 <223> OTHER INFORMATION: n= a, c, g, or t
145 <220> FEATURE:
146 <221> NAME/KEY: unsure
147 <222> LOCATION: (381) (382) ✓
148 <223> OTHER INFORMATION: n= a, c, g, or t
150 <220> FEATURE:
151 <221> NAME/KEY: unsure
152 <222> LOCATION: (387) ✓
153 <223> OTHER INFORMATION: n= a, c, g, or t
155 <220> FEATURE:
156 <221> NAME/KEY: unsure
157 <222> LOCATION: (398) ✓
158 <223> OTHER INFORMATION: n= a, c, g, or t
160 <220> FEATURE:
161 <221> NAME/KEY: unsure
162 <222> LOCATION: (418) ✓
163 <223> OTHER INFORMATION: n= a, c, g, or t
165 <220> FEATURE:
166 <221> NAME/KEY: unsure
167 <222> LOCATION: (429) ✓
168 <223> OTHER INFORMATION: n= a, c, g, or t
170 <220> FEATURE:
171 <221> NAME/KEY: unsure
172 <222> LOCATION: (436) ✓
173 <223> OTHER INFORMATION: n= a, c, g, or t
175 <220> FEATURE:
176 <221> NAME/KEY: unsure
177 <222> LOCATION: (462) ✓
178 <223> OTHER INFORMATION: n= a, c, g, or t
180 <220> FEATURE:
181 <221> NAME/KEY: unsure
182 <222> LOCATION: (467) ✓
183 <223> OTHER INFORMATION: n= a, c, g, or t
185 <220> FEATURE:

RAW SEQUENCE LISTING

DATE: 05/06/2005

PATENT APPLICATION: US/09/857,613B

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186 <221> NAME/KEY: unsure
187 <222> LOCATION: (473)
188 <223> OTHER INFORMATION: n= a, c, g, or t
190 <220> FEATURE:
191 <221> NAME/KEY: unsure
192 <222> LOCATION: (514)
193 <223> OTHER INFORMATION: n= a, c, g, or t
195 <400> SEQUENCE: 3
196 cttacagaca aacggcagtt tgtaagcgag ctggcacgcg tcgcagctcc tggggcgaga 60
197 ataatcattg tgacctggtg ccataggaac ctcgagccat ccgaagagtc cctgaaacct 120
198 gatgagctga atctcctgaa aaggatatgc gatgcatatt atctcccaga ctggtgctct 180
199 ccttctgatt atgtcaaaat tgccgagtcga ctgtctcttg aggatataag gacagctgat 240
W--> 200 tgggtcaagag aacgtcgccc caatccggnc tgcnggttat taaatnaagc aattgacatg 300
201 gnaagggtta actttctcct ggctaagaan tgggtgggaa gacgattaag aaggtggaat 360
202 gggatgatgcc tccgatgat nnaaggntac aaagaaangg gtcaacaaat ttaacaanaa 420
203 caacctgtnc caaagncccc aaacaacgca ataatacccc antaatnaaa ttncgctcct 480
204 ggctaacctt ctccaacaac gaattaatgg aaanttctga c 521
206 <210> SEQ ID NO: 4
207 <211> LENGTH: 82
208 <212> TYPE: PRT
209 <213> ORGANISM: Oryza sativa
211 <400> SEQUENCE: 4
212 Leu Thr Asp Lys Arg Gln Phe Val Ser Glu Leu Ala Arg Val Ala Ala
213 1 5 10 15
215 Pro Gly Ala Arg Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu Glu
216 20 25 30
218 Pro Ser Glu Glu Ser Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys Arg
219 35 40 45
221 Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp Tyr
222 50 55 60
224 Val Lys Ile Ala Glu Ser Leu Ser Leu Glu Asp Ile Arg Thr Ala Asp
225 65 70 75 80
227 Trp Ser
230 <210> SEQ ID NO: 5
231 <211> LENGTH: 592
232 <212> TYPE: DNA
233 <213> ORGANISM: Oryza sativa
235 <220> FEATURE:
236 <221> NAME/KEY: unsure
237 <222> LOCATION: (295)
238 <223> OTHER INFORMATION: n= a, c, g, or t
240 <220> FEATURE:
241 <221> NAME/KEY: unsure
242 <222> LOCATION: (342)
243 <223> OTHER INFORMATION: n= a, c, g, or t
245 <220> FEATURE:
246 <221> NAME/KEY: unsure
247 <222> LOCATION: (491)
248 <223> OTHER INFORMATION: n= a, c, g, or t

```

RAW SEQUENCE LISTING

DATE: 05/06/2005

PATENT APPLICATION: US/09/857,613B

TIME: 13:30:05

Input Set : A:\BB1289 - Sequence Listing.txt

Output Set: N:\CRF4\05052005\I857613B.raw

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250 <220> FEATURE:
251 <221> NAME/KEY: unsure
252 <222> LOCATION: (495)
253 <223> OTHER INFORMATION: n= a, c, g, or t
255 <220> FEATURE:
256 <221> NAME/KEY: unsure
257 <222> LOCATION: (519)
258 <223> OTHER INFORMATION: n= a, c, g, or t
260 <220> FEATURE:
261 <221> NAME/KEY: unsure
262 <222> LOCATION: (549)
263 <223> OTHER INFORMATION: n= a, c, g, or t
265 <400> SEQUENCE: 5
266 cttacatgta agctcgtgcc gaattcggca cgagcttaca aaatggccca cgccgccgcg 60
267 gccacgggcg cactggcacc gctgcatcca ctgctccgct gcacgagccg tcatctctgc 120
268 gcctcggtt cccctcgcgc cggcctctgc ctccaccacc accgccgcgc ccgccgcagc 180
269 agccggagga cgaaactcgc cgtgcgcgcg atggcaccga cgttgctctc gtcgtcgacg 240
W--> 270 gcggcggcag ctcccccggg gctgaaggag ggcctcgcgc ggctctacga cgaancgtcc 300
271 ggcgtgtggg agagcatctg gggcgagcac atgcaccacg gnttctacga cgccggcgag 360
272 ggcgcctcca tgtccgacca ccgccgcgcg ccagttcgca tgatcgagga cctcgcttc 420
273 gccgcctccc cgatgatcgc agaagaacca aaatgtattg atttggtgtg gattggtggt 480
274 actcaagata ntggngaaca atacggacgc atgctacgna tacttgatcg gtgcaggtga 540
275 aagagaaanc ctgcgcgaga caaggatatag caagtccctt taagttgtat ga 592
277 <210> SEQ ID NO: 6
278 <211> LENGTH: 144
279 <212> TYPE: PRT
280 <213> ORGANISM: Oryza sativa
282 <220> FEATURE:
283 <221> NAME/KEY: UNSURE
284 <222> LOCATION: (99)
285 <223> OTHER INFORMATION: Xaa = ANY AMINO ACID
287 <400> SEQUENCE: 6
288 Leu Thr Cys Lys Leu Val Pro Asn Ser Ala Arg Ala Tyr Lys Met Ala
289 1 5 10 15
291 His Ala Ala Ala Ala Thr Gly Ala Leu Ala Pro Leu His Pro Leu Leu
292 20 25 30
294 Arg Cys Thr Ser Arg His Leu Cys Ala Ser Ala Ser Pro Arg Ala Gly
295 35 40 45
297 Leu Cys Leu His His His Arg Arg Arg Arg Arg Ser Ser Arg Arg Thr
298 50 55 60
300 Lys Leu Ala Val Arg Ala Met Ala Pro Thr Leu Ser Ser Ser Ser Thr
301 65 70 75 80
303 Ala Ala Ala Ala Pro Pro Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr
304 85 90 95
W--> 306 Asp Glu Xaa Ser Gly Val Trp Glu Ser Ile Trp Gly Glu His Met His
307 100 105 110
309 His Gly Phe Tyr Asp Ala Gly Glu Gly Ala Ser Met Ser Asp His Arg
310 115 120 125
312 Arg Ala Pro Val Arg Met Ile Glu Asp Leu Ala Phe Ala Ala Ser Pro

```

RAW SEQUENCE LISTING ERROR SUMMARY
 PATENT APPLICATION: US/09/857,613B

DATE: 05/06/2005
 TIME: 13:30:06

Input Set : A:\BB1289 - Sequence Listing.txt
 Output Set: N:\CRF4\05052005\I857613B.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:1; N Pos. 586,718,762,773,782,790
 Seq#:3; N Pos. 269,274,286,302,330,381,382,387,398,418,429,436,462,467,473
 Seq#:3; N Pos. 514
 Seq#:5; N Pos. 295,342,491,495,519,549
 Seq#:6; Xaa Pos. 99
 Seq#:9; N Pos. 385,396,909
 Seq#:10; Xaa Pos. 127,128,129,130,131,132,133
 Seq#:11; N Pos. 361,368,401,418,428
 Seq#:13; N Pos. 315,325,395,438,472,488,491,492,502,526,535,537,546,563,582
 Seq#:13; N Pos. 590,602,617,620,623
 Seq#:14; Xaa Pos. 103
 Seq#:15; N Pos. 617,829,841,876,911,918,919,927,936,938,969,979,981,992
 Seq#:15; N Pos. 1004,1012,1017
 Seq#:16; Xaa Pos. 202
 Seq#:17; N Pos. 494
 Seq#:18; Xaa Pos. 165
 Seq#:19; N Pos. 567,596,627,639,655,697,709,1039,1066,1116,1152
 Seq#:21; N Pos. 454,1072,1083,1092,1100
 Seq#:22; Xaa Pos. 152
 Seq#:23; N Pos. 269,274,286,302,330,381,382,387,398,418,429,436,462,467,473
 Seq#:23; N Pos. 514
 Seq#:29; N Pos. 31,151
 Seq#:30; Xaa Pos. 5,45

VERIFICATION SUMMARY

DATE: 05/06/2005

PATENT APPLICATION: US/09/857,613B

TIME: 13:30:06

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L:12 M:270 C: Current Application Number differs, Replaced Application Number
L:13 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:67 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:540
M:341 Repeated in SeqNo=1
L:200 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:240
M:341 Repeated in SeqNo=3
L:270 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:240
M:341 Repeated in SeqNo=5
L:306 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:96
L:444 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:360
M:341 Repeated in SeqNo=9
L:488 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10 after pos.:112
M:341 Repeated in SeqNo=10
L:561 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11 after pos.:360
M:341 Repeated in SeqNo=11
L:691 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13 after pos.:300
M:341 Repeated in SeqNo=13
L:727 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14 after pos.:96
L:829 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:15 after pos.:600
M:341 Repeated in SeqNo=15
L:885 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:16 after pos.:192
L:922 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17 after pos.:480
L:965 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18 after pos.:160
L:1038 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:540
M:341 Repeated in SeqNo=19
L:1130 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21 after pos.:420
M:341 Repeated in SeqNo=21
L:1181 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22 after pos.:144
L:1305 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23 after pos.:240
M:341 Repeated in SeqNo=23
L:1510 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29 after pos.:0
M:341 Repeated in SeqNo=29
L:1548 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30 after pos.:0
M:341 Repeated in SeqNo=30